

## PATENT COOPERATION TREATY

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REC'D 10 OCT 2005

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference W 5546-001 AB	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE2004/001437	International filing date (day/month/year) 07.10.2004	Priority date (day/month/year) 09.10.2003
International Patent Classification (IPC) or national classification and IPC G01N 21/41, G01M 11/02		
Applicant Neural AB et al		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 3 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 27.07.2005	Date of completion of this report 30.09.2005
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88 Form PCT/IPEA/409 (cover sheet) (April 2005)	Authorized officer  Lars Jakobsson/MP Telephone No. +46 8 782 25 00

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/001437

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1 - 9 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages\* 1 - 2 received by this Authority on 27.07.2005
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages 1 - 4 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/001437

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>1-6</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-6</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-6</u>	YES
	Claims	_____	NO

## 2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

DE 2133803, A1

EP 0974829, A1

The cited documents represent the general state of the art.  
The invention defined in the amended claims 1- 6 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method and device of determining refractive index of an object compared to a refractive index of a surrounding medium where the number of particles of a first substance having a first refraction index and particles of a second substance having a second refraction index in a specific area of said object is counted.

Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-6 is novel and is considered to involve an inventive step. The invention is industrially applicable.

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## Amended Claims

1. Method of determining refractive index of an object compared to a refractive index of a surrounding medium,

5 exposing said object to a laser object beam and letting the object beam interfere with a laser reference beam to obtain a hologram,

analyzing the hologram for phase information, determining if the refractive index of the object is higher  
10 or lower than the refractive index of the surrounding medium based on said phase information, **characterized by**

arranging said object in a medium, said object comprising particles of a first substance having a first refractive index and a second substance having a second  
15 refractive index and said medium having a refractive index between said first and second refractive index;

counting the number of particles having a first refractive index and counting the number of particles having a second refractive index in a specific area of said  
20 object.

2. The method as claimed in claim 1, **characterized** in that said steps of analyzing and determining are performed by a computer.

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3. A device for determining refractive index of an object compared to a refractive index of a surrounding medium, comprising

a laser source for exposing said object to a laser  
30 object beam and letting the object beam interfere with a laser reference beam to obtain a hologram,

a computer for analyzing the hologram for phase information, and for determining if the refractive index of the object is higher or lower than the refractive index of

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the surrounding medium based on said phase information,  
**characterized** in that

5       said object comprising particles of a first sub-  
stance having a first refractive index and a second sub-  
stance having a second refractive index and a medium having  
a refractive index between said first and second refractive  
index; and

10       said computer is arranged to count the number of  
particles having a first refractive index and the number of  
particles having a second refractive index.

15       4. Computer program arranged on a tangible medium  
for execution on a computer for performing at least one of  
the method steps of any one of claims 1 to 2.

5       5. Use of the method of any one of claims 1 to 2  
for separation and counting particles in a particle blend.

20       6. Use of the method of any one of claims 1 to 2  
for calculating the volume ratio between particles in a  
particle blend.